

CLAIMS

What is Claimed is:

- Sub A1*
1. A method for replacing a microelectronic spring contact bonded to a terminal of a substrate, the method comprising:
- 5 removing the microelectronic spring contact from the terminal;
- aligning a replacement spring contact over the terminal, the replacement spring contact comprising a base configured to fit over the terminal, and at least one resilient cantilever arm extending from the base, whereby the replacement spring contact is aligned so that the base of the replacement spring contact is opposite to the
- 10 terminal and the resilient cantilever arm extends away from the substrate; and
- bonding the replacement spring contact to the terminal.
2. The method of Claim 1, wherein the removing step further comprises cutting the microelectronic spring contact in two adjacent to the terminal.
3. The method of Claim 1, wherein the bonding step further comprises
- 15 depositing a bonding material between the terminal and the replacement spring contact.
4. The method of Claim 3, wherein the bonding step further comprises depositing the bonding material consisting essentially of a solder paste.
5. The method of Claim 4, wherein the bonding step further comprises applying an electric current across the base of the replacement spring contact using an
- 20 electrode.
6. The method of Claim 1, wherein the aligning step further comprises aligning the replacement spring contact having a core of resilient material coated with a conductive material.
7. The method of Claim 6, wherein the aligning step further comprises
- 25 aligning the replacement spring contact having the core made of nickel-cobalt alloy.

8. The method of Claim 6, wherein the aligning step further comprises aligning the replacement spring contact having the core coated with gold or a gold alloy.

9. The method of Claim 1, wherein the aligning step further comprises aligning the replacement spring contact having the base with at least two legs extending from the base in a direction opposite to the cantilever arm.

10. The method of Claim 1, wherein the aligning step further comprises aligning the replacement spring contact whereby the at least two legs are on opposite sides of a stub protruding from the terminal.

11. A method for forming a microelectronic spring contact, the method comprising:

- depositing a release layer over a substrate;
- depositing a seed layer of conductive material over the release layer;
- depositing a layer of sacrificial layer over the seed layer;
- patterning the sacrificial layer to form at least one recess exposing the seed layer in the shape of the side profile of a microelectronic spring contact;
- filling the at least one recess with a resilient material;
- removing the layer of sacrificial layer to reveal a microelectronic spring contact comprising a base and an arm extending from the base, wherein the base and the arm are adhered along sides thereof to the substrate and an axis of the microelectronic spring contact extending between a distal tip of the arm and the base is parallel to the substrate; and
- releasing the microelectronic spring contact entirely from the substrate.

12. The method of Claim 11, wherein the first depositing step further comprises depositing the release layer consisting essentially of aluminum.

25 13. The method of Claim 11, wherein the second depositing step further
comprises depositing the seed layer consisting essentially of copper.

14. The method of Claim 11, wherein the third depositing step further comprises depositing the layer of sacrificial layer consisting essentially of an SU-8 photoresist.
15. The method of Claim 11, wherein the filling step further comprises 5 electroplating the resilient material in the at least one recess.
16. The method of Claim 11, wherein the filling step further comprises electroplating a nickel-cobalt material in the at least one recess.
17. The method of Claim 11, further comprising depositing a conductive material over the microelectronic spring contact after the releasing step.
18. The method of Claim 17, wherein the depositing a conductive material step further comprises plating the conductive material consisting essentially of a layer of gold.
19. The method of Claim 11, further comprising bonding the base of the microelectronic spring contact to a second substrate after the releasing step, wherein the microelectronic spring contact is oriented so that the axis of the spring contact extends away from the second substrate.
20. The method of Claim 19, wherein the bonding step further comprises bonding the base to a terminal of the second substrate.

21. A method for repairing a microelectronic spring contact comprising a beam bonded to at least one post that is in turn bonded to a terminal of a substrate, the method comprising:

removing the beam from the at least one post, thereby providing a
5 removed beam;

removing at least a portion of the at least one post from the terminal;
aligning a replacement post piece over the terminal, the replacement post piece comprising a base configured to fit over the terminal, and at least one replacement post extending upwards from the base, whereby the replacement post piece is aligned so that the base of the replacement post piece is opposite to the terminal and the at least one replacement post extends away from the substrate;
10 bonding the replacement post piece to the terminal; and
bonding a replacement beam to the at least one replacement post, wherein the replacement beam is selected from a group consisting of the removed beam and a new beam essentially identical to the removed beam.

22. The method of Claim 21, wherein the first removing step further comprises de-soldering the beam from the at least one post.

23. The method of Claim 21, wherein the second removing step further comprises cutting the at least one post in two adjacent to the terminal.

20 24. The method of Claim 21, wherein the first bonding step further comprises applying a solder paste to the terminal.

25 25. The method of Claim 24, wherein the first bonding step further comprises applying an electric current across the replacement post piece to activate the solder paste.

26. The method of Claim 21, wherein the second bonding step further comprises applying a solder paste to the at least one replacement post.

27. The method of Claim 26, wherein the first bonding step further comprises applying an electric current across a portion of the replacement beam to activate the solder paste.

28. The method of Claim 21, wherein the aligning step further comprises
5 aligning the replacement post piece made of nickel-cobalt alloy.

29. The method of Claim 21, wherein the aligning step further comprises aligning the replacement post piece having a base with at least two legs extending from the base in a direction opposite to the at least one post.
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30. The method of Claim 29, wherein the aligning step further comprises
10 aligning the replacement post piece whereby the at least two legs are on opposite sides of a stub protruding from the terminal.

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